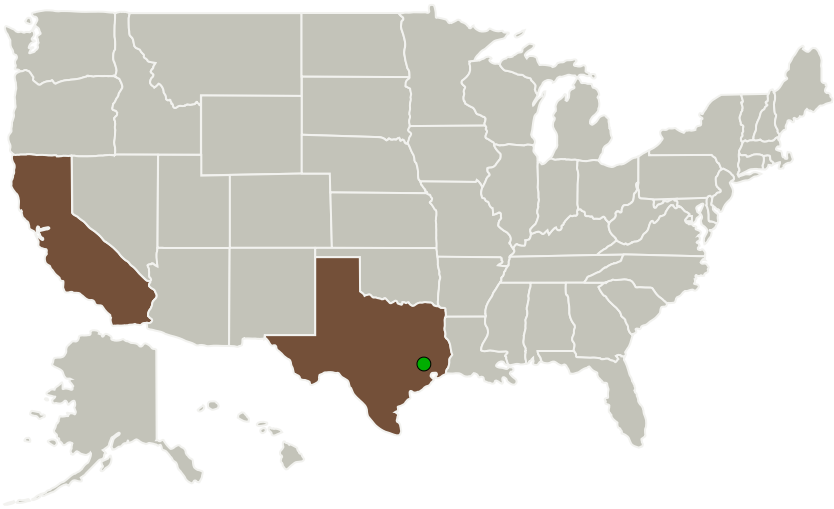
Liposome Encapsulation of Vitamins to Enhance Storage Properties of Space-Bound Food, Phase I

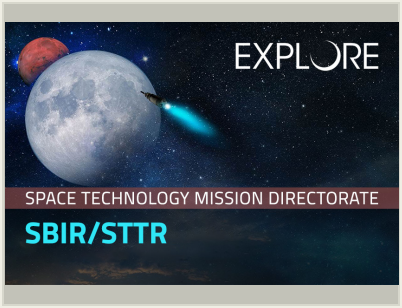
Completed Technology Project (2012 - 2012)

Project Introduction

InnoSense LLC (ISL) proposes to develop a nanoparticle encapsulation systems for water- and fat-soluble vitamins (VitaCap™) to increase shelf life up to five years for long duration space missions. This encapsulation technology would preserve/enhance the nutrient content of space foods by increasing the amount of bio-active vitamins delivered into the body. Ensuring adequate nutrition that is adapted to these physiological conditions in space, adds a new dimension to the challenges of planned long duration human spaceflight missions beyond low earth orbit (LEO). Phase I feasibility studies are expected to demonstrate that encapsulated vitamins do not degrade and the proposed encapsulation materials do not allow diffusion of the vitamin under processing and storage conditions. It would also be established that bioactive vitamins are released under digestion conditions.

Primary U.S. Work Locations and Key Partners





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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
Innosense, LLC	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB), Women-Owned Small Business (WOSB)	Torrance, California
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
California	Texas

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138681)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Innosense, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

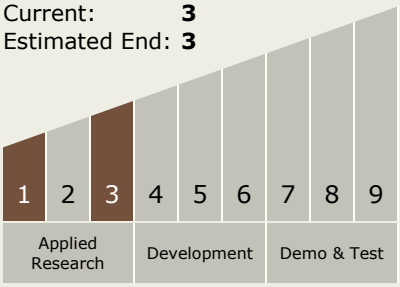
Carlos Torrez

Principal Investigator:

Maksudul Alam

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



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Completed Technology Project (2012 - 2012)

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.5 Food Production, Processing, and Preservation

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System